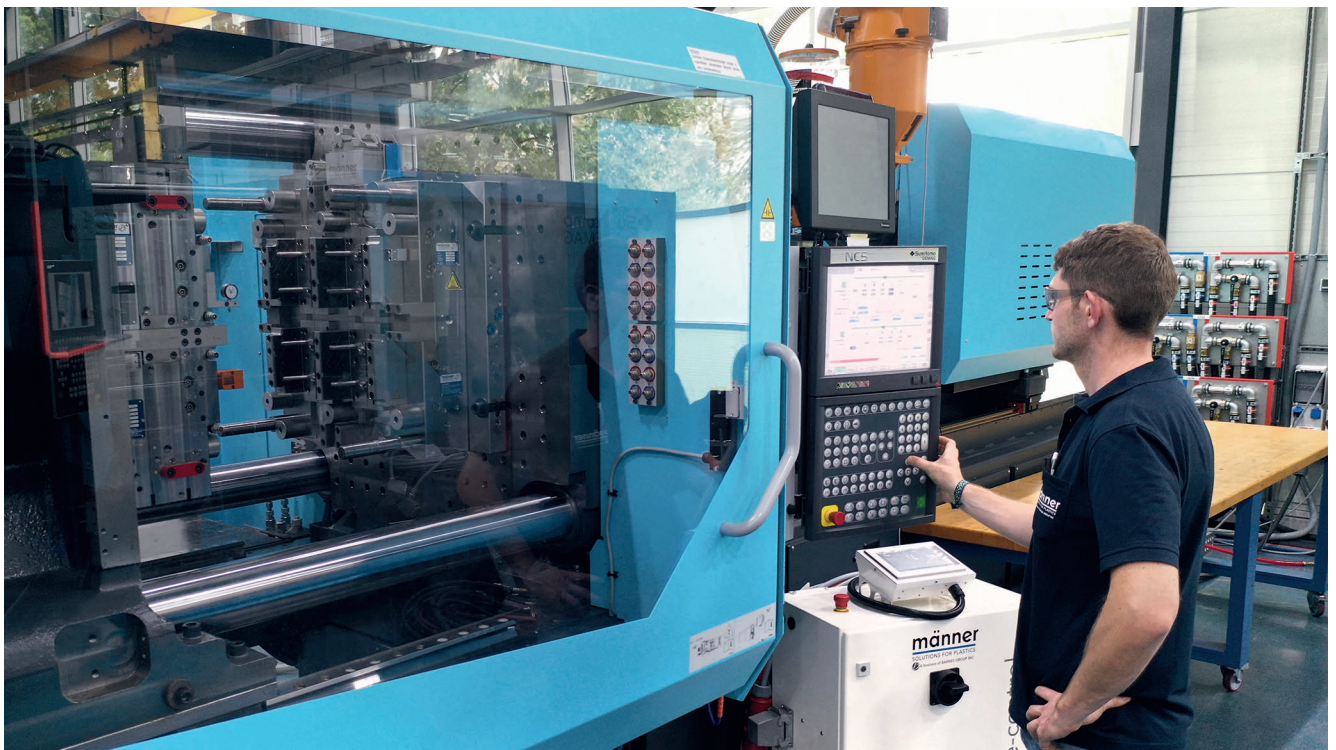


Fast and Effective Start of Production

The Advantages of a Network for Global Qualification for Injection Molding

During this year's pandemic, maintaining supply capability has become a key necessity among processors. Closer involvement of suppliers is only logical in these circumstances. In toolmaking, new challenges are emerging for services related to molds. This is where the global, high-performance infrastructure of Barnes Molding Solutions enters the picture. The slogan here is "globally qualified local manufacturing."



Tool qualification in the test center in Bahlingen, Germany. After that, the tool is ready for the "site acceptance test", i.e. for the acceptance on site directly at the customer © Männer

The so-called "Global Hybrid Qualification" offered by Molding Solutions, a strategic business unit within Barnes Group (see Box p.8) involves technology transfer based on global manufacturing capability, for which all units are tailored and harmonized for qualification of customer molds (Fig.1). The activities involved in the process were further extended and refined during the pandemic in 2020. Norbert Scheid (Fig.2), President of Barnes Molding Solutions, stated, "The key focus is to stay in close contact with customers all across the globe. The goal is the high-

est process reliability and availability of molds, regardless of where the customer manufactures." The concept is related to all high-performance mold systems within Barnes Molding Solutions, including customer-specific hot runner systems, control technology, and process control.

The Strategic Approach of Standardized Quality Guidelines

Global Hybrid Qualification is based on two underlying principles. On one hand, customers can receive faster and more

qualified support if an entire global network is utilized for the project. On the other hand, many customers are globally positioned and want to use production molds at different locations, according to defined quality standards. "The toolmaking industry must meet global demand with global solutions," said Norbert Scheid. "Barnes Group supports this conceptual approach of global customer proximity through group-wide technology transfer."

The most important criteria for global cooperation between Barnes Mold-



Fig. 1. "Seal of Quality" stands for global quality standards of Barnes Molding Solutions © Barnes Group

ing Solutions' companies in Europe, the USA, and Asia are standardized quality guidelines related to CAD/CAM processes, our fleet of machine tools, and qualification. The qualification process can be carried out according to customer specifications or according to our uniquely-developed Barnes Molding Solutions benchmark. The "Molding Solutions Qualification Standard" was developed following strict scientific molding criteria.

Molds can be built in the Barnes Molding Solutions plant in China and prepared for sampling and qualification. In Suzhou, a pre-qualification routine – the FOT process (First off Tool) – is initially carried out. These molds are then subject to final qualification testing at group network locations in Europe or the USA. During the current pandemic, however, the model for developing and manufacturing molds in Europe (Germany and Switzerland) and finally qualifying them in the USA is also becoming increasingly important.

Tech Centers Bring together Qualification Expertise

Each tech center at the respective locations plays a key role. The four qualification locations in China, Germany, and the USA employ experienced process engineers and high-performance machinery. A total of 37 injection molding machines with clamping force ranging from 700kN to 5000kN, including machines for multicomponent and cube molds are available. Beginning in 2021, an additional injection molding ma-

chine for the automotive sector with 27,000kN of clamping force and an injection molding machine featuring high-speed automation will go into production.

For sensitive customer development, production cells can be installed at all locations, with the complete handling process restricted to closed-off areas with separate office units. The extensive calculating technology used for assessing quality parts includes measuring machines for optical and tactile testing, thermal imaging, hydrological measurement, high-speed camera systems, and flow »



Fig. 2. Norbert Scheid, President of Barnes Molding Solutions © Barnes Group

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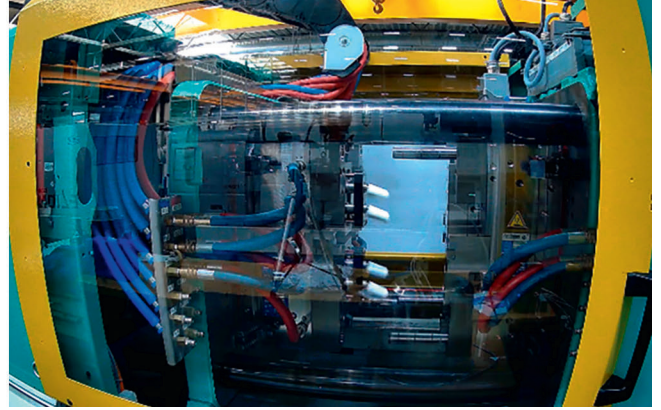
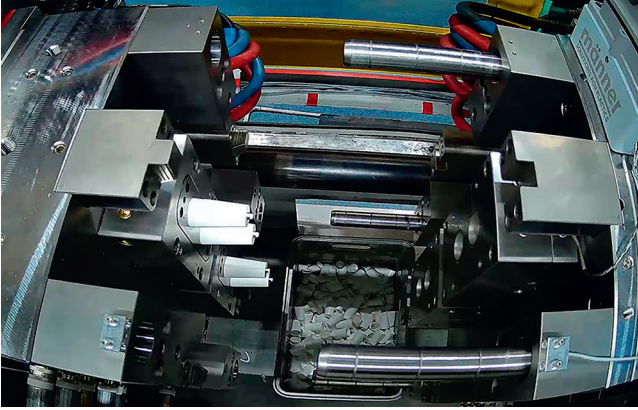


Fig. 3. The “Online Mold Qualification” is transmitted from the test center by a high-resolution camera without the customer having to travel

© Männer

rate meters. After completing the “SAT ready” qualification (ready for site acceptance test), customers receive complete documentation and optimal process par-

ameters, which allows them to begin with site acceptance testing and start production promptly.

The local application engineers then accompany the physical start-up of production. Norbert Scheid stated, “A smooth start-up of production is essential for the processor to prepare for contract manufacturing with defined delivery quantities and times. With our global toolmaking resources in engineering, project management, and lifecycle services, we ensure that our customers can carry on their operations.”

Due to global travel restrictions, the method was expanded to include “Online Mold Qualification” (Fig. 3). DOE (Design of Experiments) and FAT (Factory Acceptance Test) can occur using high-resolution camera technology, without the customer having to travel.

A Holistic Technology Approach and One-Stop Specialist

The basis for economic high-end mold concepts is the elaborate interplay between the mold, hot runner system, temperature control, and process control as a comprehensive system. Process control is becoming increasingly important in this regard. “Today, molds are intelligent process units and include automated sensors for keeping a process stable,” said Norbert Scheid. “Barnes Molding Solutions combines all components into a single high-performance production system. The customer benefits from not only a mold but also a reliable, overall solution. The low total cost of ownership this approach facilitates adds up to the highest level of customer satisfaction.” ■

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Company Profile

Barnes Group Inc. is a global company whose products and services are used in many different applications and end markets, including aerospace, transportation, manufacturing, automation, healthcare and packaging. **Barnes Molding Solutions Group** is a strategic business unit within Barnes Group, which includes renowned brands in the areas of mold making, hot runner technology and temperature and process control. Synventive, Thermoplay, Männer, Foboha, Priamus and Gammaflux deliver a comprehensive portfolio of solutions to meet the demanding requirements of global customers in the injection molding industry (figure: © Männer).

The global network of Barnes Molding Solutions includes production sites in Germany, Switzerland, Italy, China and the USA as well as four qualification sites in Bahlingen, Haslach, both Germany, Suzhou, China, and Lawrenceville, USA.

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